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ABSTRACT

Like legal language, medical language is a private language, a separate stratum containing some words specially defined for medical purposes, some existing only in the medical vocabulary, and some adding precision or solemnity. These characteristics often cause a breakdown in patient-doctor communication. Analysis of data obtained from prototype definitions responses to a list of 32 medical terms showed that there was a varying amount of semantic overlap between physician or nurse and patient ranging from almost complete overlap to almost zero overlap for some medical terms. Among some of the findings were the following: (1) medical workers have a more general, more inclusive meaning than do lay people for such medical terms as fracture, colic, diabetes, and arteriosclerosis; (2) many medical terms (hypertension, stroke, obesity, prematurity) are not comprehensible at all or are barely so for certain patients, depending upon their backgrounds and experiences; (3) meanings are a result of beliefs and experiences for both males and females; (4) the causes of a disease or condition are less well understood than are the symptoms and results; and (5) lay people operate on a concrete level in understanding medical meanings. In order to improve matches between physician meanings and nurse/patient meanings, physicians need to understand the impact of presuppositions, intentions, beliefs, attitudes, moods, and encyclopedic knowledge in the interpretive processes. They need to lay bare the misleading assumptions common among themselves and nurses that account for difficulties in comprehending medical terms. (HOD)

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Problems for the Average Adult in Understanding Medical Language

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As the following examples of actual parental excuses for a child's absence from school illustrate, many laymen not only have problems in spelling medical terms, they also have problems with their meanings.

"Please excuse Wayne for being out yesterday. He had the fuel."

"Carol was hit yesterday playing football. He was hit in the growing part."

"Please excuse Joey Friday. He had loose vowels."

"Please excuse Roland from P.E. for a few days. Yesterday he fell out of a tree and misplaced his hip."

"Mary could not go to school because she was bothered by very close veins."

Norwell Knight Life

My intention in this paper is to examine meaning problems of the medical lexicon and medical settings as evidenced in written and oral discourse and to suggest some partial solutions for these medical meaning problems. I will attempt to accomplish this by examining the distinguishing semantic features of medical language in order to show how they differ from ordinary language and by examining extralinguistic factors that result in a lack of shared meaning between the producer and the consumer of medical language. My data will consist of information and examples from eleven informants from the medical profession, five female and six male, and the responses to a prototype description of medical terms list given to students at Indiana Vocational Technical College, students of the Licensed Practical Nurse program of Fort Wayne Vocational School, employees of Phelps Dodge Research and Development division and physician and nurse informants.

The language of medicine like the language of law is interesting for its own sake. Both can be considered artificial or exotic languages and when a speaker of English studies them, he often runs into odd facts. Because of the oddities and because it is a language, it's worth studying. Another reason for studying medical language is the practical implication for the producers of medical language, the physicians and nurses. Medical malpractice law suits are increasing at a tremendous rate because of medical, behavioral, psychosocial, and socioeconomic factors. One of the most important factors that influence claim frequency for negligently caused injuries is due to a breakdown in communication and understanding between doctor or nurse and patient. It has recently been legally reasoned that inasmuch as a patient has the right to decide what will be done with his body (at least insofar as medicine is concerned), he has the right to all information necessary to allow him to make that decision intelligently. It is then reasoned that it is the physician's duty to be sure the patient is "fully informed" and capable of making the decision that more often than not he probably thought the physician was supposed to make in the first place. If no

problems develop, the informing was probably sufficient, but if an untoward event occurred, the informing was probably insufficient, else the patient would never have consented. Recent legal speculation indicates that harm may not be necessary to prove malpractice. Merely the failure to "adequately inform" may be construed as evidence of negligence. Medicine is an area where the consumer is at a technical disadvantage and needs extra information if he wishes to make an informed decision. Physicians need to be aware of the extent of medical communication failures, their causes, and what they can do to increase their communicative skills.

Definitions and books of definitions are important in legal and medical language. Wittgenstein in his definition of a definition said that definitions are rules for the translation of one language into another. Because of the nature of the language for law and medicine, there is a need for "translation." Any person deciding to make law or medicine a career will make extensive use of definitions as he learns his trade. Many hours go into learning medical terminology and definition. It's interesting to compare the way different medical dictionaries define the same lexical item. In a medical office assisting booklet, Glossary of Key Words, the notes to the instructor point out: Under the word there are two definitions for that word. The "A" definition is more difficult and specific, and the "B" definition is easier and more general.

pneumonia

pneu mo nia

A. an acute inflammation of the lung marked by formation of an exudate in the interstitial and cellular portions. (= condition)

B. A lung disease where fluid is formed in the air sacs therefore preventing good oxygen supply. (= consequences)

Taber's Cyclopedic Medical Dictionary 1942 and 1972 editions differ in their definitions of pneumonia.

Taber's 1942: "Inflammation of the lungs with exudation into the lung tissue and high temperature." (Then follows material on etiology, symptoms, nursing practice, treatment and subtypes. A temperature chart for lobar pneumonia is illustrated. 904 words.)

Taber's 1973: "Inflammation of the lungs caused primarily by bacteria, viruses, chemical irritants, vegetable dusts and allergy. There are more than 50 different causes; the most common ones are listed in the accompanying table. (A chart of specific microbial causes, diseases accompanied by pneumonic pneumonias not caused by: Infections.)" Then follows material on symptoms, nursing practice, and 15 subtypes. 621 words.

The 1973 edition used more words in the initial definition and focused on causes. They reduced the wordage by using a table for causes rather than the long prose account in the 1942. The high temperature chart was eliminated, the treatment was eliminated, and they increased the number of subtypes by six. Both editions gave pronunciation markings and etymology (Gr. pneumon, lung + ia, condition).

Encyclopedia and Dictionary of Medicine and Nursing - Miller/Keane. "Acute inflammation or infection of the lung. Pneumonia once was a common cause of death and killed more than one out of four victims. It is still a serious disease, especially in infants and the elderly, who are most vulnerable. The general mortality rate has been drastically reduced, however, because of new medicines and modern methods of treatment." (Then follows a section labeled types, symptoms and treatment and nursing care. Pronunciation is included but no etymology.) 813 words.

American Heritage Dictionary: "An acute or chronic disease marked by inflammation of the lungs and caused by viruses, bacteria, and physical and chemical agents. It gives pronunciation and an etymology. (N.L. fr Gr penumonia, alleration (by association with pneuma, breath) of pneumonia, disease of the lungs, from pleumon, lung. See pleu in Appendix*.)" 92 words.

The AHD gives no charts or long prose accounts of types, symptoms, treatments, or nursing care. The etymology does not indicate that ia means condition but gives more information about pneumon.

It is clear that there are different styles in defining a medical term. The glossary of key terms met the needs of the medical office assisting students by giving both a difficult and an easy, non-technical definition. Taber's changed its focus over the years on the important features in its format of presenting information. Miller/Keane used a very non-technical format in its initial information and gave background information, trying to meet the needs of nursing students. The AHD was concise and on about the same technical level as Taber's. Medical dictionaries used by physicians would be on a more concise, technical level and would not give nursing care information.

In addition to medical dictionaries, there are books on medical terminology to help train medical personnel in acquiring a medical vocabulary. The emphasis is on learning the meanings of roots and stems and combining forms that are components of medical words and arriving at a definition of a word by analysis of its parts. They give components of medical words that might pertain to body fluids, substances, colors, and numerals. They also give lists of prefixes, suffixes, and Greek and Latin verbal and adjectival

derivatives. The books contain terminology for anatomy, physiology, pathology, cytology, diseases, diagnostic procedures, and syndromes. In chapters pertaining to anatomical structures, figurative anatomy is included in the definitions. Many anatomical terms for parts of the body derive their names from the shape or configuration of some object. This was a practice of both Greeks and the Romans in naming anatomical structures when they had no better way to identify them. In an example of a definition of a combining form: cor (kor): heart (E & L), the cor in coronary vessel does not derive from the cor meaning heart, but rather from corona, meaning crown. The names of some diseases change and need to be updated to reflect the latest nomenclature. Many definitions of disease now are expanded to include how the body is affected. Muscles are defined as to form, position, function, and points of origin and attachment, as well as figuratively. Multiple system disease definitions include the causative agent or microorganism and much information on the disease process. All of this information is given to facilitate the learning of the steps necessary to build a medical vocabulary.

Building a medical vocabulary is as difficult as building a legal vocabulary. Special courses in medical and legal linguistics are required for anyone deciding to enter medicine or law as a career. Both require learning many meanings of Latin and Greek prefixes and roots, suffixes, combining forms and numbers in order to analyze words. Although knowing some prefixes, roots, and suffixes helps the average person understand his ordinary language and analyze new words, he can get along fairly well with learning only a few basic ones. This is not true for medical and legal language. Both require extensive knowledge of Latin and Greek word parts. The morphological peculiarities and complexities of medical and legal language confound the average person.

Fillmore (1972) points out that the language of law has its own semantic guidelines and principles. The basis of definitions is frequently one or "rights" and "responsibilities"; the semantics of the technical stratum of legal language is founded on stipulative definitions; a checklist semantics gone mad; it has a great deal of built-in vagueness; it has achieved an effective compromise between checklist semantics and prototype semantics in the form of principles of statutory interpretation; and has disjunctive definitions. Legal semantics is compositional and noncompositional at the same time with many phrases as lexical items that are partly arbitrary and partly motivated and non-idiomatic phrases used with conventional frequency or popularity whose meanings need to be defined as units. Legal semantics also has many paradigms, taxonomies, contrast sets and networks. Although legal language is similar in some respects to ordinary language, it is also different from it. It has a private vocabulary, a separate stratum with some words belonging to it because they have meanings that are specially defined for legal purposes, some because they exist only in the legal vocabulary, and some because they add precision or solemnity.

Many of these observations apply for medical semantics too. The basis of definitions in medicine would frequently be one of the classification of

diseases, which is called nosology. In an article called "The Nosology of Genetic Disease" the author had this to say:

> At first glance, the subject of nosology--the classification of diseases--might seem to be the essence of theoretical, academic medicine. To the practicing clinician, the question of whether a particular pathologic constellation is filed in the proper conceptual pigeonhole would appear as little relevant as the subtle taxonomic distinction between Pinus strobus and Pinus sylvestris would be to a practicing lumberman or carpenter. A moment's thought, however, will show that nosology--in medicine, if not in carpentry--is an eminently practical study. One need only recall, for example, that hardly more than a century ago such phenomena as jaundice, dropsy, and anemia were still often classified, and treated, as "diseases" in their own right, rather than as symptoms consistent with many distinct pathologic entities. Accurate nosology is obviously essential in the area of prognosis and therapy (e.g., pernicious anemia versus iron deficiency anemia), and no less so in the field of prophylaxis, whether this concerns recurrence in a given individual or among the population at large (e.g., jaundice due to Rh incompatibility, to alcoholic cirrhosis, or to infectious hepatitis). Accurate nosology is essential to the understanding of disease. If we are talking intelligently about a disease (or any other subject) we need to be sure that we are actually talking about the same thing, that we are discussing the same pathologic entity.

The author also points out that "lumping and splitting" is characteristic of medicine, especially nosology. In the early days of medicine the splitters tended to dominate often as a result of specialization in medicine. Through collaboration between different specialists, this is now changing and today many "lumpers" have been correcting much of the "oversplitting" of earlier years and a new wave of betterfounded splitting has greatly expanded the list of discrete entities. In genetics this reflects the development of subtler methods for distinguishing phenotypically similar but genetically heterogenous conditions.

Another article, "Phenotypic Overlap of the BBB and G Syndromes," shows the importance of "splitting genetic diseases that look similar but are not." Two tables are used that illustrate the importance of feature analyses in nosology.

SPLITTERS

botanical taxonomy. The author's selection of the dramatis personae (Stephen A. Douglas and Abraham Lincoln) suggests his own strong bias in favor of splitting.

LUMPERS

"Lumping" and "splitting," here personified by two famous U.S. historical figures, are perennial and complementary tendencies in nosology, as well as in zoological and

Table 1. G Syndrome--Manifestations in Cases 1 and 2

	Case 1	Case 2
Hypospadias	1st degree	2nd degree
Hypertelorism	orbital	orbital
Narrow palpebral fissures	+	-
Widow's peak	+	+
High palate	+	-
Weak voice	+	-
Ptosis	+	-
Anteverted nares	+	+
Ears posteriorly rotated/small/ protuberant	+	+
Pectus carinatum	-	+
Long fingers/toes	+	-
Syndactyly 2nd - 3rd toes	+	-
Simian line	+	-
Distal axial triradius	+	+
Hirsutism	+	-
Intellectual impairment	IQ 85	IQ 73
Psychogenic megacolon	+	-
Carrier parent	Pat	Mat
Intravenous pyelogram normal	+	+
Banded chromosomes normal	+	+
Age last examined (yr)	13.7	6.2
Parental age at birth (yr) MO	21	31
FA	22	34
Birthweight (kg)	6.699	3.864

Table II. BBB Syndrome--Manifestations in Cases 3 and 4

	Case 3	Case 4
Hypospadias	2nd degree	2nd degree
Cryptorchidism (rt)	-	+
Hypertelorism?	orbital	orbital
Clefting, bilateral CLP	+	+
Widow's peak	+	-
Exotropia	+	+
Nasal bridge high and broad	+	+
Ears posteriorly rotated/small/ protuberant	+	+
Micrognathia	-	+
Pectus carinatum	-	+
Kyphosis	-	+
Clinodactyly, 4th toe	-	+
Distal axial triradius	-	+
Low arches	-	+
Intellect	IQ 107	tutoring-math
Carrier parent	Mat	Mat
Intravenous pyelogram normal	+	+
Age last examined (yr)	12.7	6.7
Parental age at birth (yr) MO	21	20
FA	21	32
Birthweight (kg)	2.812	3.665

Medical semantics has its share of stipulative definitions but not to the extent that legal semantics has. Because of changes in society, medicine has a stipulative definition for death. Now there is a more realistic definition of death based on more meaningful evidence than the mere evidence of a pulse. Medicine has revised the criteria for death and may also have to do this for cadaver tissue, a dead body. The problem is a need by society and its members of vital organs for transplantation from a dead body of a desperately ill patient. The question is whether there is valuable "property" in a dead body with an interest in that body flowing to the living or whether the cadaver is merely "flesh given to worms." Stipulative definitions are used in medicine for the various medical practioners roles such as M.D.'s, Doctors of Medicine; D.O., Doctor of Osteopathy; R.N., Registered Nurse; L.P.N., Licensed Practical Nurse; many of these stipulative definitions are on a continuum that ranges from very discrete to very fuzzy. This can be illustrated with APA, the American Psychological Organization. The organization would rank the practitioners in a descending order like this:

APA Organization

Discrete	M.D.	- psychiatrist
	Ph.D	- psychologist
	M.S.	- psychologist
Somewhat Fuzzy		- counseling psychologist
		- clinical psychologist
		- school psychologist
Fuzzy		- marriage counselor
		- therapist

The average layman does understand the differences between these specialists. To many, a therapist means the same as a psychologist and a psychologist means the same as a psychiatrist. Not understanding the stipulative definitions is one reason why laymen are confused about medical language. New stipulative definitions have emerged in the nursing field recently. Some states have now licensed nurse practitioners. The new role for this type of nurse is extended to include working independently in primary care of patients, diagnosing and prescribing and collecting patient fees. They are not under the supervision of a doctor in some states. In other states they are, and are considered physicians' extenders. The new stipulating definition is a result of changes in society--the growth of assertiveness in women. The American Nursing Association has been working on a definition of nursing for twenty years. ANA's newly revised Model Nurse Practice Act includes expanded role definitions for both registered nurses and LPN's.

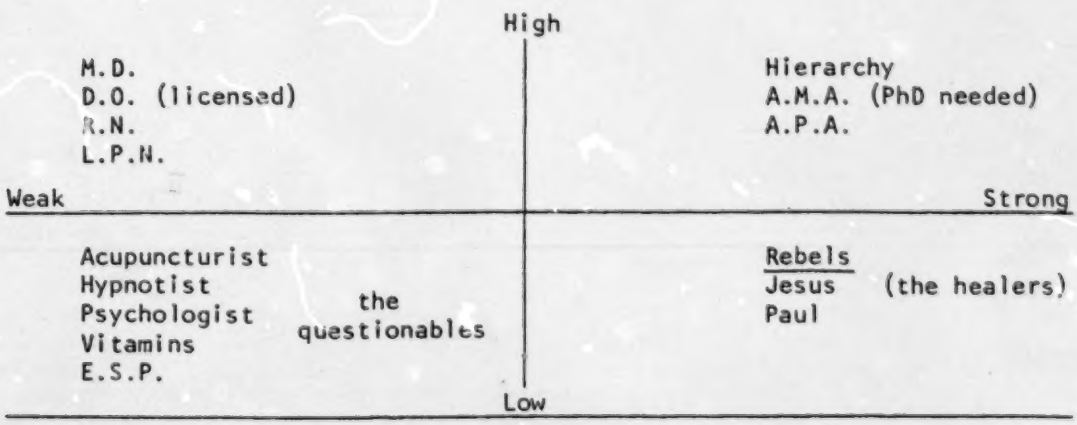
> "The practice of Nsg as performed by the registered nurse" as stated in the updated definition, is a process in which substantial specialized knowledge derived from the biological, physical and behavioral sciences is applied to the care,

treatment, counsel, and teaching of persons who are experiencing changes in the normal health processes; or who require assistance in the maintenance of health or the management of illness, injury, or infirmity or in the achievement of a dignified death; and such additional acts as are recognized by the nursing profession as proper to be performed by a registered nurse."

References to registered nurse administration of medicines and treatments as prescribed by a licensed physician or dentist, that appeared in the 1964 definition have been deleted. Also removed was the statement that the practice of nursing cannot "include acts of diagnosis or prescription of therapeutic or corrective measures."

The definition of LPN practice has been expanded to "the performance under the supervision of a registered nurse of those services required in observing and caring for the ill, injured, or infirm, in promoting preventive measures in community health in acting to safeguard life and health, in administering treatment, and medication prescribed by a physician or dentist or in performing other acts not requiring the skill, judgment, and knowledge of a registered nurse."

Medical doctors are very negative about these extended roles for nurses. Organizations such as the American Nursing Association, the American Psychological Association, and the American Medical Association make these stipulating definitions, whether or not the medical practitioner is considered acceptable to these organizations or not depends on whether they have the "right" credentials. The same goes for other medical entities, also. One of my informants attended a workshop at Concordia Theological Seminary in Fort Wayne recently for psychologists where the workshop leader used the following chart:



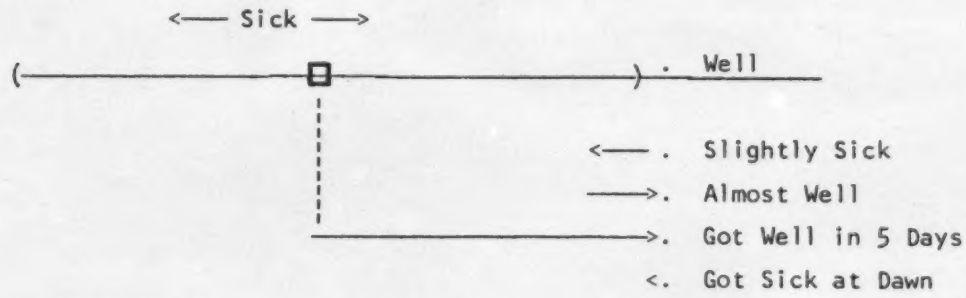
Another feature that medical and legal language has in common is the built-in vagueness. Medical language, however, has much more vagueness and looseness than does legal language. Since the legal profession looks to the past, it can be more discrete, more arbitrary than can the medical profession, which looks into the future. Medicine is not an exact science and new scientific discoveries are made every day both of which prevent discreteness. Some of the medical vagueness is intentional on the practitioners part for fear of malpractice suits and because of their superior attitudes: "I know, but it is not necessary, Mr. Layman, that you know. Therefore, I'll be vague and I'll hedge and I may even lie." Physicians are often vague because they are afraid that what they will say may upset the patient. They may feel that the patient or the patient's family is not capable of handling the truth. For example, the physician may use the word tumor or lump rather than cancer, cancer being a specific type of malignant tumor or lump. Many physicians do not want to explain or be pinned down, so they use vague words and sentences. This built-in vagueness increases the possibilities for meaning mismatches between physicians and patients.

When asked to rate fuzziness in medical language on a scale of 1 to 10 (10 = fuzziest), all subjects asked rated it an 8 or 9. One of my doctor informants pointed out that this is the exact opposite of what most patients think is true. Most patients would give a 1 or a 2 rating, according to him. Perhaps this is one of the reasons for the lack of meaning correspondence between doctor and patient. Many patients and laymen do not recognize the amount of plasticity or elasticity in medical semantics. One surgeon informant stated that using prototype definitions was almost standard among doctors in the real world. It saves time to do it that way, and time is important to doctors. He said he would never use a prototype definition in writing, but he did in oral communication and in his mind when he was charting patients. For instance, the term diabetic to him means a female, overweight, over 40 years, problems with high blood pressure, and hardening of the arteries. Diabetic to a patient means high blood sugar. When he charts a patient, the prototype is in his mind, but what he puts on the chart in writing would be very different. Fear of legal action at times prevents doctors from being explicit in writing. They are, however, explicit in actual conversations with other doctors. They are also vague, indirect in actual conversation with patients. Doctors find it easy to be obscure when they communicate. It is easy to use the conventional medical terminology and be obscure. It's difficult and time-consuming to be explicit--clear. He pointed out that there is a naturalistic trend today on the part of medical literature stylists to insist on doctor authors being direct and clear. He was happy for the change.

There are some medical terms that are fixed and discrete such as pregnant, dead, cancer, and appendicitis. A woman is either pregnant or she isn't. She can't be sort of pregnant. But there are medical terms that are fuzzy, terms that are on a continuum such as obesity, elderly, heart attack, chronic brain syndrome, hypertension, flu, dermatitis, sinus, bronchitis, prematurity, arteriosclerosis, cholesterol, psychoneurotic, psychosomatic,

and gout. In the case of gout, what is a doctor to tell a patient if tests show a level of uric acid much higher than normal levels but there are no symptoms? Tests say he has it, but there are no symptoms and lab tests must be interpreted in terms of symptoms. So, usually, a doctor hedges and runs the tests again to see if they come out the same. The medical term for a case like this is hyperuricemia. Does he have gout? If so, to what extent?

The looseness of medical language is the result of diseases and conditions. Conditions have dimensionality and extensionality; they have relativities and plasticities rather than fixities. Diseases or conditions have a dynamics about them, a pattern of evolment through time. This can be illustrated by using some of the information in the Talmy (1978) article, "Rubber Sheet Cognition."



3 Types of Conditions

A) "One way" attribution--specifies the transition from one condition to another but not the return.

1) Non-resettable - Example = Muscular Dystrophy.

2) Resettable - a return is possible.

Example: a) Swelling - atrophy versus hypertrophy

b) Metastasized malignant tumor. It could go either way but probably will go downhill.

c) Dismorphology, birth defects. Resettable by human intervention--cleft palate and club feet.

B) "Full cycle" attribution--specifies the return to the original condition. Example: cell division.

C) "Steady state" - Remaining in one condition--no transition from it. Example: normal metabolism.

The phenomenon of shifting from one point to another is very common in medicine. Take for example high blood pressure. In an individual it may vary from normal range to high range over different days or even at different points within the day or in different stressful situations. It is often very difficult to determine if a person indeed has an abnormality or a normal situation. Often the words acute, subacute, chronic, and good, fair, poor, and critical are used to show the dimensionality. Not understanding the shifting and the dynamics involved, the dimensionality in medical language leads to many meaning problems for laymen.

In medicine the term "soft signs" is used to designate situations where doctors can't be sure of the signs or features and so have problems in classifying the problem. Trying to determine if a child is functionally or organically learning disabled is such a situation. The things doctors find are not totally out of the ordinary for these children; they are apparently minor things such as clumsiness and difficulty with hopping. It may be a neurological problem, but it may also be because the family has deprived the child of tender loving care and other nuturing qualities. Doctors are reluctant to diagnose because they usually don't have enough facts about the family to really know if the cause is functional or organic when Johnny can't read or learn at school.

Hedging is another characteristic of medical semantics. It is done extensively in medical language using words like appears to be, seems to be, possible, allegedly, has a tendency to, many . . . tendencies. As pointed out before, hedging is done by doctors because they fear litigation, because they really don't know the answer since medicine is not exact, because they don't want to see the reactions of shocked patients, and because they feel bad news will harm the patient further, and because the human body is not like an assembly line produced engine. Doctors never use the word "cancer." They don't even like to use the word tumor. If a patient came to a doctor and was given a series of tests and was found to have cancer of the liver, his doctor might say to another doctor, "Joe X has had this test, that test and such a test; he has cancer of the liver." The doctor would say to the patient, however, "You have a possible lesion in the liver which will have to be looked into." Doctors won't commit themselves to the patient because they say there's 1 chance in 100 that they are wrong. A report to an insurance company would be phrased, "probable carcinoma of the liver." Nurses use hedging words because they are not allowed to diagnose.

Doctors admit there is much hedging done in medicine and say that it is done for at least two basic reasons. One is that often things are uncertain in medicine and another is that even if a certain outcome is known, if this outcome is bad, physicians hate to remove all hope from the patient. They hedge with dying patients and if such a patient asks, "Am I dying?", the doctor answers, "Don't ever give up because sometime during your life someone will find a cure."

There is a definite conventional way of communicating with patients diagnosed as having cancer. "You have a possible problem in the liver and we need to investigate it." —> "You have a mass in the liver and we need to take more

tests to find out what the mass or growth is." —> "We need to do more testing to find out what it is not." —> "It appears you have a malignant tumor. We'll need to do some surgery, for only by getting a piece and looking at it under the microscope will we be sure." Then maybe there will be a commitment to a diagnosis. The doctor had made a cancer of the liver diagnosis by using other clues--a prototype definition in effect. He noticed the patient was pale, had a weight loss, had anemia, had a large, hard liver when examined manually, and had abnormal blood tests. General practitioners use prototype definitions and loose terms in an office setting more than they do in a hospital setting. The patients have minor problems when they go to the office; they are sicker in a hospital and more tests are used, so doctors use more fixed terms in the situation. Medical specialists would use terms that were more fixed than would a G.P. One of the most distinguishing marks of medical language is the fuzziness of the terms and the amount of hedging done. In legal language there is a balance between checklist semantics and prototype semantics, but this is not true in medical language.

Another characteristic that legal and medical language share in common is the use of phrases as lexical items, some idiomatic and some non-idiomatic. One example is the idiomatic phrase, "302 is going out" which means that the patient in Room 302 is dying. Another one is "put X on the floor" which means admit X to that particular unit of the hospital. "Sam Spade RHC'd this evening." means he died. "Code Blue" and "Doctor Blue" are phrases meaning cardiac arrest. The phrase "shift to the left" is used when the white blood count is up, an increase with young neutrophiles which is a response to bacterial infection versus a viral infection. It's related to positioning of a line on a graph. A left shift line is one that coordinates what would generally be smaller numbers on the horizontal axis. When a doctor gets a report on white cells, the counts on the left side of paper are the bacterial count, and the ones on the right side are viral. It's an arbitrary decision to design and use the lab report form this way. Both legal and medical semantics are compositional and non-compositional at the same time as these examples show. When lexical items, either words or phrases are arbitrary or only partly motivated, meaning difficulties arise between the speakers and hearers of these lexical items.

Contrast sets and taxonomies are characteristics of legal and medical semantics, also. Medical language has its contrast sets such as intake and output (I/O). Input is the measurement of fluid intake, all forms of fluid such as liquid drinks, IV's (intravenous solutions), gelatin, ice cream, and popsicles. Output is the measurement fluid that leaves the body such as urine, emesis (vomiting), perspiration and liquid stools. Other contrast sets would be the doctor and patient dyad or the doctor and nurse set. Another example is congenital and genetic. Congenital is a condition a person is born with that's acquired in utero such as congenital syphilis. Genetic is a condition that is inherited because of the genes such as Downs Syndrome and hemophilia. An example of a taxonomy with a nested set in medicine would be malignant diseases. These can be broken down into four subtypes according to the location of the malignancy: carcinoma =

epithelial cells; sarcoma = connective tissue; lymphoma = lymphatic organs; and leukemia = blood cells. Carcinoma can be sub-categorized into breast, stomach, and prostate carcinoma. Leukemia can be broken down into lymphatic and myelogenous (myelocytic), both of which can be broken down into acute and chronic varieties. Lymphoma can be subdivided into Hodgkins and non-Hodgkins types. Hodgkins can be divided into several kinds, one of which is lymphosarcoma and the non-Hodgkins can be further divided also, one of which is Burkitts. There is a great taxonomic depth in medicine as there is in law. This complexity also adds to the problem of laymen trying to make sense out of medical terms.

A final way that legal terminology and medical terminology are isomorphic is in the origin of their terms. Both have origins in Latin and Greek. Words like bacteriology, physiology, physics, adenoids, osteopathy, pediatrics, psychiatry, and psychoanalysis are examples of Greek labels. In present-day medical terminology, Latin shares with Greek as the source of a host of new coinages or of new applications of words already adopted, such as penicillin, radium, and sulfa; and there are many hybrids, part Greek part Latin, such as terramycin and tonsillectomy. Legal terms seem to have come to us indirectly from Latin and Greek through French. These technical words borrowed from Latin and Greek are complicated for the typical layman. He finds it difficult to pronounce them, spell them, and understand them since he has no background in either Latin or Greek usually. The use of these Latin-Greek words often tends towards obscurity or inflated emptiness of content. Dr. Joe Christian, one of my informants, says this:

> "Unfortunately, complex terms are often used that mean very little more than simple terms. Most medical terms are the result of our medical education and communication with other physicians. The motivation for many terms in my impression sometimes is to seem to give an answer when no answer is really available. For example, the term arthrogryposis, multiplex congenita, may be thought to be a very specific diagnosis but in reality this means that the child is born with stiff and bent joints."

It is strange that only a few native Anglo-Saxon words are to be found in legal and medical language. A few that have preserved in legal language are law and lawyer and writ. Some that remain in medical language but on the laymen's level are words like womb, heart, eye, and mouth. In the book, Medical Nemesis, Illich comments on this language barrier that technical terminology creates between the professional in-group and the clients defined as the out-group:

> "Language is taken over by the doctors: the sick person is deprived of meaningful words for his anguish, which is thus further increased by linguistic mystification. Before scientific slang had come to dominate language about the body, the repertory of ordinary speech in this field was exceptionally rich. Peasant language preserved much of this treasure into our century. Proverbs and sayings kept instructions readily available. The

way complaints to the doctor were formulated by the Babylonians and Greeks has been compared with the expressions used by German blue-collar workers. As in antiquity the patient stutters, flounders, and speaks about what "grips him" or what he "has caught." But while the industrial worker refers to his ache as a drab "it" that hurts, his predecessors had many colorful and expressive names for the demons that bit or stung them. Finally, increasing dependence of socially acceptable speech on the special language of an elite profession makes disease into an instrument of class domination. The university-trained and the bureaucrat thus became their doctor's colleague in the treatment he dispenses, while the worker is put in his place as a subject who does not speak the language of his master."

The result of a non-native stock of words in patient-doctor communication is lack of meaning. While at the hospital, patients are intensively and progressively mystified. At the time of dismissal less than one-third have understood what disease they have been treated for, and less than one-fourth, what therapy they have been subjected to (Engelhardt, 1973). In Los Angeles Children's Hospital, 20% of mothers do not understand what ails their children, 50% do not grasp the origins of their disease, and 42% do not follow the advice they receive, frequently because they cannot grasp it (Korsch, 1972). No doubt back in the Anglo-Saxon days, leechcraft (medicine) and lagu (law) were better understood by the laymen than now because the leechman (doctor) and witan (law man) with their leechbooks and Domesday Boc had no Latin or Greek loan words or prefixes or suffixes to use to cause a language barrier. Today patients are beginning to demand rights; one of them is the right to read lab reports and surgical reports. Not many patients would be able to decipher the following report because of the technical language based on Latin and Greek words:

Surgical Procedure: Transurethral resection of the prostate gland.

Procedure: Following satisfactory spinal anesthetic, the patient was prepped and draped in the lithotomy position. The urethra was dilated with a No. 30 French with sounds. A meatotomy had to be performed. A No. 28 McCarthy resectoscope was passed into the bladder. Inspection of the bladder showed a definitely trabeculated bladder, with a small 1+ enlarged prostate gland, which was definitely obstructive. No tumor or stone was noted. Both ureteral orifices were in their normal position on the trigone. The medial lobe was removed, beginning at the bladder neck. Both lateral lobes were undercut and were then removed entirely. About 15 gms of tissue were removed. Bleeding was well controlled throughout. At the end of the procedure, the prostatic urethra was wide open. A No. 24, 30-ml inwelling catheter was left in place. Irrigations were clear, and the patient was sent to the recovery room in satisfactory condition.

A distinguishing feature of medical language is that it is well motivated. It has a high degree of analyticity for those who understand Latin or Greek. To the medical student or practitioner words like sterno/cleido/mastoid, chole/cyst/itis, nephro/pylec/litho/tomy, and pneumo/thorax are easy to understand. Knowing that -itis means inflammation, and -sis means condition or process, or -tomy means a cutting process helps make words analyzable. A word like hematuria means blood in the urine (hemo = blood; uro = urine). Spermaturia means sperm in the urine. There are some terms, however, that are confusing because they are not well-motivated. If hematuria means blood in the urine, so should uremia if the parts are examined. Uro = urine, em = blood, and ia = condition. However, the word means urine wastes in blood. Colpohysterectomy is not completely motivated. Colpo = vagina, hyster = uterus, ectomy = surgical excision. It appears that the word should mean removal of the vagina and uterus but it actually means a vaginal hysterectomy or removal of the uterus by way of the vagina. Carcinoma is confusing because carcin = cancer and oma = tumor. Cancer is a growth and a tumor is a growth so both parts mean a growth. Pancarditis is an example of a word whose whole is greater than the sum of its parts. The pan means that the word covers endocarditis, pericarditis and rheumatic fever. These examples show cases where the parts do not equal the whole but most of the lexical items in medical language are readily decomposable.

Medical abbreviations cause many meaning problems for ordinary folk. Abbreviations are another distinguishing feature of medical language. They are used extensively among physicians and nurses and sometimes are used by them in communicating with patients. There are two types of abbreviations: standard and non-standard. Some hospitals and some doctors have their own special definitions which can cause communication problems for nurses. A doctor might have the abbreviation P.C.N. for penicillin. In one case of specialized abbreviation, the nurse was given orders (in writing) to care for a patient in a local Fort Wayne hospital by a urologist. He used the letters F.T.B. The nurse had not seen these letters used before, so she called his office for an explanation. The urologist screamed at her over the phone "Freeze the balls!", meaning--put ice bags to the scrotum. The result of the unnecessary abbreviation and the angry response to her question was an angry nurse with no respect for the doctor. Common abbreviations used are EMS, ER, CPR, EMR, OB, EKG, IV, CA, TLC. Some less common ones are STAT = now; p.o. = post operative; prime ip = first pregnancy (primipara); AC and PC = before meals and after meals; MOM = Milk of Magnesia; SOB = shortness of breath; FLK = funny looking kid (used by geneticists to refer to anomalies) I and O = intake and output; GU = genitourinary; GTT = drops; CC = cubic centimeters. Sometimes doctors, in writing prescriptions, do not use the word drops but use GFT. Some druggists put "as directed" on the label of the medicine container rather than translating the abbreviations. Patients can't translate it, so often do not follow the medicine directions. Many patients do not know CC so don't know how much to measure out in taking medicine. The use of abbreviations is one of the most important causes of non-understanding patients.

Colorful words are often used in medical circles. Doctors and nurses use phrases such as mushy uterus, boggy fundus, sagging ST wave, whistling

face syndrome, strawberry nevi, and zapping (a stopped heart). Tools of the trade are referred to by the name of the company which makes them. A urinary catheter is a Foley--probably decreed by a "doctor stockholder." Catheters which are red rubber are always designated with the word French after the size. This is not a brand name but refers to the French numerical system. A patient reading a surgical report would find sentences like these: "The urethra was dilated with a No. 30 French with sounds." He would wonder about that last part of the sentence! "A No. 24, 30-ML indwelling" catheter was left. He would wonder about this sentence, too. These characteristics are interesting to note but could also be sources for the quizzical expressions on the faces of non-medical people when they hear or see them used.

Polysemy causes problems, too. A nurse noting that a patient's fever was up in the morning as she made her rounds might say, "Have you been drinking?" meaning that he should be drinking some kind of liquids such as water or juices to prevent dehydration. The patient, however, might respond in a reproving voice, "I'm not a drinking man!" A nurse asking "Did you void this morning, Mrs. Jones?" might get a reply like this, "Void, what do you mean? Oh, did I pee?"

Words like sterilization, valve, ventilating, and accident have all caused meaning problems for patients according to my informants. Medical language like legal language is a private language; a separate stratum with some words belonging to it because they have meanings that are specially defined for medical purposes, some because they exist only in the medical vocabulary, and some because they add precision or solemnity. This private medical language is indeed very different from ordinary language.

In this part of the paper, I would like to continue the examination of complications in the representations of medical meanings by analyzing the data obtained from prototype definitions responses to a list of medical terms given to a sample of male and female laymen. The analysis will attempt to show that there is a varying amount of semantic overlap between physician/nurse and patient ranging from almost complete overlap to almost zero overlap for some medical terms. There will be an attempt to show that there is a lack of shared expectations and beliefs, a lack of understanding each other's intentions and purposes, and a lack of a mutual recognition of behavior patterns for the physician/nurse-patient dyad which results in frequent semantic mismatches. In addition, the analysis of data will try to demonstrate the high degree of subjectivity in the respondent's prototype definitions, shown by their instantiation of the medical terms. I will suggest, further, that many of the meaning mismatches are a result of a broken given-new social contract on the physician's part, an unnatural use of oral language by physician, an egocentric perspective of the physician and an unsufficient amount of time spent by the physician with the patient.

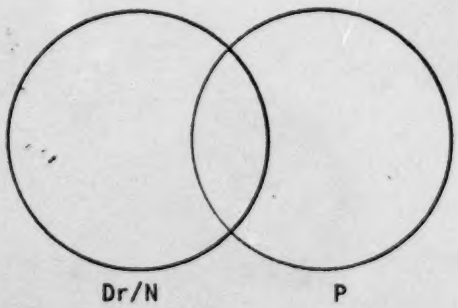
A list of 32 medical terms was given to a total of 120 male and female laymen; male students at Indiana Vocational Technical College; male and female employees of the chemical research division of Phelps Dodge Magnet

Wire Company; female medical assistant students at Indiana Vocational Technical College; and female licensed practical nurse students at Fort Wayne Regional Vocational School, a part of Fort Wayne Community Schools. The same list was also given to the medical informants used for this study of medical meanings. The respondents were asked to describe the typical case of the medical term describing with phrases--what it is, who typically has it, what typically caused it, the typical behavior: in other words, the typical salient characteristics and features about each term, necessary and associated. A prototype definition is one which recognizes the fuzziness of a category and which distinguishes a prototype use of word from its more peripheral uses. Because of the limitations of time, only a selected group of the 32 terms is discussed and analyzed. The analysis would have benefited from biographical information about each respondent but none was required on the form given to them. Since some of the students are my own students at IVTC and some are personal acquaintances and since the medical respondents are also personal acquaintances of mine, I did have some biographical knowledge but not enough. Another problem was the uncontrolled situation for the respondents defining the terms. Some had more time than others and so had more complete definitions with more features given. The list was given to the students by different instructors or persons resulting in different instructions or different emphases on the instructions. Still, the data proved both informative and enlightening, from both the prototype definition medical term list and from the written and oral responses received from the physician and nurse informants.

If a pregnant woman were admitted to the hospital in the early months of pregnancy and the doctor, after examining her said, "You are trying to abort." the woman would react defensively saying, "No! I didn't do anything." Women interpret abort and abortion to mean something negative. To them and to men, also, abortion has a specialized meaning--an artificially induced expulsion of a fetus. The doctor's meaning is a more general one. To a doctor, abortion is simply the termination of pregnancy, regardless of whether it is spontaneous or deliberate, before the fetus is viable. In the strictest medical sense, the words abortion and miscarriage both refer to the terminology of pregnancy before the fetus is capable of survival outside the uterus. In general language, however, abortion refers to deliberate (and often criminal) termination of pregnancy while miscarriage connotes a spontaneous or natural loss of the fetus. That these statements are true can be illustrated in the definitions given by the men and women in the prototype definition sample. The men (80%) labeled abortion as killing a fetus, getting rid of a baby, removal of embryo, artificially induced, terminated by medical or non-medical ways, killing of a human life. The rest of them understood abortion to mean loss of the fetus by any female mammal, premature termination of pregnancy, or the ending of pregnancy. One respondent said that an abortion was asked for by uncool women, was approved of by low life men, and was the foul destruction of an unborn child and performed by unreal doctors. One said abortions involved little or no pain, and one knew that abortions could be caused by accident, injury, disease, malformations, and be naturally or artificially induced.

Of all the women respondents, 33% labeled abortion as outright killing of a fetus, or murdering; 29% considered abortion as getting rid of an unwanted child, removal of embryo, giving up her baby, removing an immature fetus from the uterus, removal of fetus via surgery or injection, induced miscarriage, getting rid of unwanted child, commonly artificial inducement, or the dislodging of a fetus; the rest referred to abortion as cessation of fetal life, termination of pregnancy, body rejecting fetus, and natural body rejection; the negative feelings women had are shown in the following descriptive words: killing, murdering, helpless unborn child, unstable woman, scared, depressed, sad, down feeling, irrational, foolishness, back street butcher, unhappiness, confused, immoral, and ugly. They felt that the typical person having an abortion was a young teenage girl (50% of them said this) who was unmarried, immature, confused, who had it in a special clinic (30% believed this) and who was confused and depressed and unhappy about it. Most of them felt abortion was the result of an unwanted pregnancy and indicated that as the cause. They also felt abortions were painful, dangerous, and controversial. Clearly the social, religious, and cultural beliefs of the respondents were evident in the responses. It is interesting that no responses indicated strong feminist feelings in the interpretation of abortion. The typical abortion according to the salient features given would be criminal abortion or induced rather than therapeutic or spontaneous. Doctors and nurses must take into account these beliefs and feelings of the layman if misunderstandings and meaning mismatches are to be avoided.

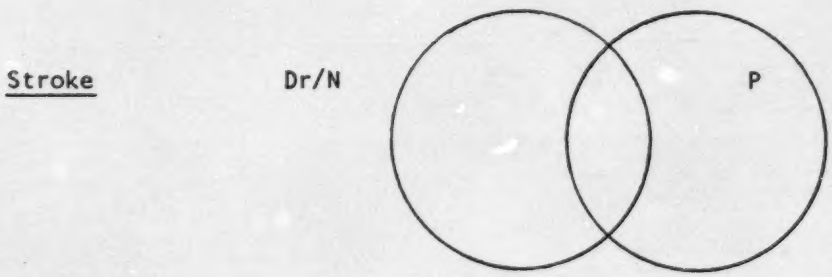
Doctors and nurses define hypertension as high blood pressure that may result in cerebral vascular accidents, kidney failure, stroke, or heart attack. Many laymen define the word differently. Apparently they try to analyze the term into its components and realize that "hyper" means excessive and believe that "tension" means tenseness, uptightness, and nervousness. They often confuse the word hypertension with hyperactivity. Laymen believe that a person who is hypertensive is a person whose nerves are in bad shape. In the survey of prototype definitions 30% of the men knew that hypertension was high blood pressure and 70% thought it meant excessive tension and activity. Even though the women were medical assistant students and were taking a medical course, only 60% of them knew it meant high blood pressure. The rest of them thought it meant tension and hyperactivity. One male thought it meant a whiplash and another that it meant a nervous twitch. One believed that it's caused by wanting attention, another that a poor diet causes it. One woman believed it leads to premature gray hair; one that it is a result of poor diet; one that it leads to ulcers. Hypertension is a medical term that is misunderstood by many people.



Physician/Nurse Meanings		Patient Meanings
Spontaneous or induced. Spontaneous--caused by factors not under control of physician or women.		Getting rid of the baby.
Induced--one that's caused. Inability of uterus to contain the products of conception or due to irregularity or abnormality of uterus, embryo, fetus, or placenta--spontaneous purposely terminating conception for therapeutic reasons or woman's personal reason--induced.	Termination of Pregnancy	Killing the fetus. A female murdering her unborn baby.
		Removal of an unborn fetus caused by accident, injury, disease. Little or no pain. Frightening. Artificially induced. Immoral woman, teenager, unmarried.
The arrest of any physical action or disease.		Low income class, unknowledgeable teenager, young woman, clinic situation. Legalized murder of unborn innocents by MD's.
Termination between the 20th and 28th week of gestation. Twenty-two types of abortion.		Approved of by lowlife men asked for by uncool women. Guilt and depression.

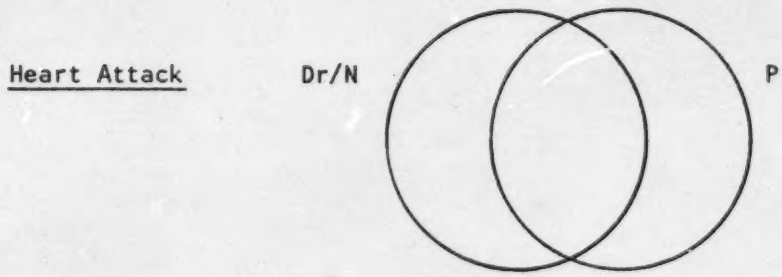
Semantic Overlap of Abortion Meaning

Doctors say that a stroke is a commonly used term for brain damage due to disruption of normal blood flow. The cause is a clotting of the blood and stoppage of the artery or a rupture of an artery and bleeding into the brain itself. One nurse defined it as a CVA (Cerebrovascular Accident) caused by hemorrhage or injury to the brain. There is impairment of function of body parts; for example, paralysis, loss of speech, slurring. The impairment of function depends on which hemisphere of the brain was involved. Another nurse characterized a stroke as "Occurring when the blood supply to the brain is stopped; it's associated with high blood pressure. More blacks than whites have it, and more women than men. Recovery is slow, as the blood supply seeks collateral networks to supply the brain." Another nurse had part of her prototype definition saying that the typical case would be a woman over 60, frail, underweight, overworked, and depressed." Stroke is a term that is easily confused with heart attack, heart trouble, heart disease, or a non-functioning heart. For 40% of the males defining the term, it was a mild heart attack or an attack similar to a heart attack. Nearly 40% of the women used the word heart in their definition such as blood clot to the heart or lungs, heart blockage, and something like a heart attack. Not all persons understood stroke to mean the apoplectic type occurring in the brain. Many thought of stroke as referring to sun stroke or heat stroke: 20% of the men and 27% of the women; they stated that strokes were caused by staying out in the sun too long--farmers and sunbathers--and from heat exhaustion. Other errors were in thinking that strokes are caused by tension, excitement, unhappiness, shoveling too much snow, stress. All realized it was sudden and serious and most realized there was an interruption of the flow of blood resulting in unconsciousness.



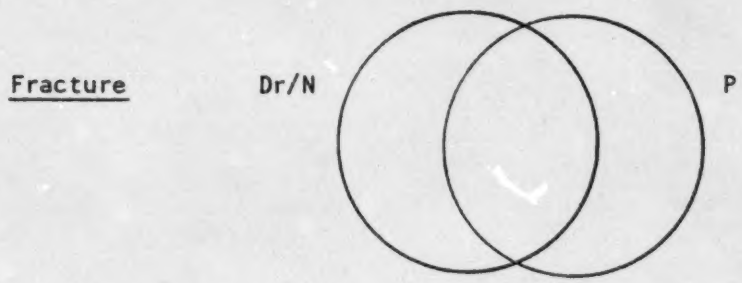
Dr. Joe Christian reports that the term "heart attack" is used to describe a wide variety of conditions, some of which are not even related to the heart. If the heart is involved, a heart attack can be used to describe an abnormality of the heart rhythm or damage to the heart muscle itself due to a decrease in blood flow to the heart. Medical people usually refer to it as a myocardial infarction or coronary occlusion where there is an occlusion of the coronary artery. Symptoms and signs include severe pain in the mid-chest, which may radiate to the shoulder, arm, and jaw. It may be accompanied by nausea, diaphoresis, and shortness of breath. CPR should be instituted immediately, otherwise there may be loss of life or irreversible brain damage. This is a layman's term for an event which occurs when the blood or oxygen supply to the heart is stopped or slowed. The typical

patient is male, obese, a smoker, an executive, over 40, has a family of heart disease, has a "driver" personality, appears strikingly frightened when arriving in coronary care unit. Heart attacks have no typical cause, may occur when victim is sleeping or when victim is up. Doctors could not use the terms coronary thrombosis or myocardial infarction with patients, for they would not understand them. Myocardial infarction is damage to the heart muscle. Coronary occlusion, a closing off of a coronary artery, and coronary thrombosis, a forming of blood clots in a blood vessel and a complication of hardening of the coronary arteries, are commonly referred to as a "heart attack." The coronary occlusion or coronary thrombosis result in the "heart attack." The result of this is a myocardial infarction, or necrosis, a death of some of the heart muscle. Neither the males or females mentioned the feature of a damaged heart muscle or necrosis, death of some of the tissue. The males knew there was a rhythm problem, a heart stoppage, a lack of blood to the heart, and that there was severe pain in the chest, that it was a malfunction, an irregular functioning involved, that there might be numbness; they didn't realize the heart muscle was damaged. They believed that heart attacks are caused by overwork, lifting, overweight, lack of exercise or strain. One believed it was a disease. They seemed to think only older people get heart attacks, but no one mentioned men having more than women. The females, 50% of them, mentioned men 40+ as typically getting a heart attack. About 50% of the females defined a heart attack as a heart stoppage, about 25% as a blockage in the heart arteries, 10% called it a myocardial infarction, although they may not have understood what it meant, and 15% labeled it as heart malfunction or disease. Most of them mentioned the sharp pain in the chest, and shortness of breath, seriousness. They believe heart attacks are caused by stress, overexertion, overweight, anxiety, jogging, hypertension, shoveling snow, smoking, drinking, tension. Neither males or females indicated that heart attacks often happen when the victim is sleeping or not engaged in strenuous activity. The layman seems to know the symptoms and results but he does not have a clear understanding of what it is or what causes it.



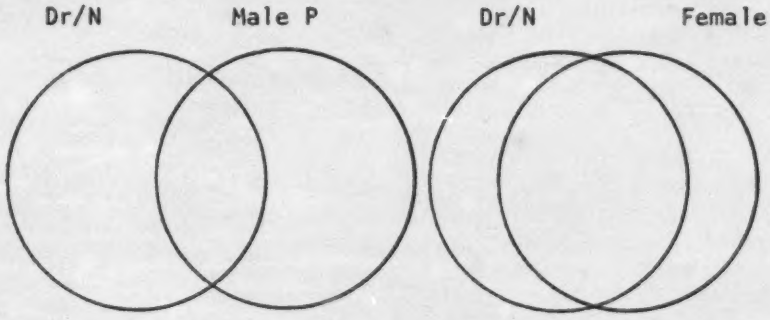
If an average parent was told by a doctor that an X-ray showed a fractured tibia, the parent might say, "Oh, I'm so glad it's not broken!" Many people do not realize that any break is a fracture, including a crack. They believe that a fracture is a mild or slight problem. A medical dictionary definition of a fracture is "a break in the continuity of bone. It may be caused by trauma, by twisting due to muscle spasm or indirect loss of leverage or by

disease that results in decalification of the bone." Although fracture is generally associated with breakage of a bone, ligaments and tendons can also "fracture." Fractured bones include hairline to simple to compound in severity. Elderly are more prone to fractures due to osteoporosis, so it typically occurs in the very old and the reckless. Fractured hips are common among the elderly. Children break the forearms and clavicles. The elderly person is usually a woman, 70+ who has slipped and fallen. Children are usually playing a game. Associated with it may be pain, swelling, redness, tenderness. So say the medical people. Other people have different viewpoints and understandings of fracture. A crack in the bone, not a break, a minor break, a partial break is the way 45% of the males defined fracture. Some considered it a compound fracture, 20%. One called it a bone loose from the body, two said there was open skin with the bone protruding in a fracture. They believe it is caused by falls, injury, fights, violent action, crushing, lack of calcium, pressure, or by showing your stupidity. Arms and legs are usually broken, anybody can break them, and they hurt and swell. Of the females, 75% defined a fracture as a broken bone. The rest called it a split bone, a slight break, almost broken bone, a crack in the bone. For 44% of them, teenage boys in sports, especially football, were the typical fracture patient; 34% said that the typical patient was a victim of a fall, and 22% an accident victim. Most of them agreed that arms and legs are typically broken, they are painful, and swollen. Neither group mentioned the elderly as typically having broken bones, that fractures can be caused by twisting due to muscle spasm, or may be caused by indirect violence.



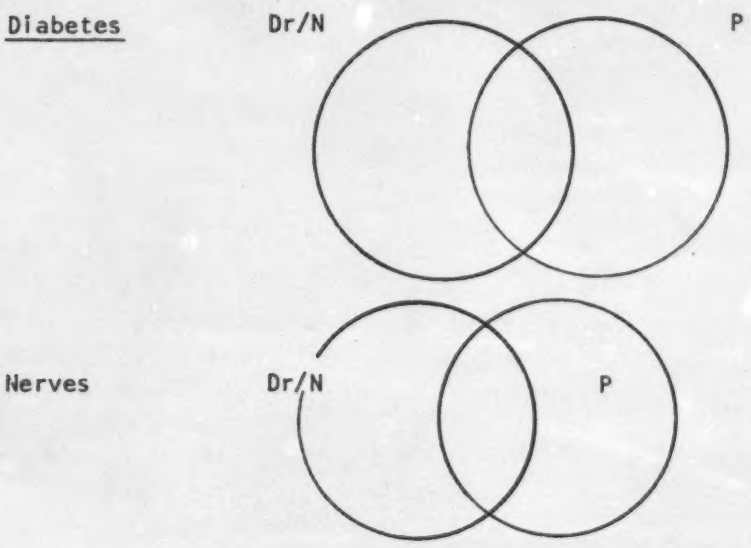
Colic is simply not computable for many persons, especially the unmarried and males. Actually, colic is defined as "a spasm in any hollow or tubular soft organ, accompanied by pain; pertaining to the colon or acute paroxysmal abdominal pain. Colic usually refers to an attack of abdominal pain caused by spasmodic contractions of the intestine, most common during the first three months of life. The infant may pull up his legs and arms, cry loudly, turn red-faced and expel gas from the anus or belch it up from the stomach. The exact cause of infant colic is unknown, but several factors may contribute: excessive swallowing of air, too rapid feeding, overfeeding, overexcitement, and an anxious or easily disturbed mother." The cause may be, then, pathophysiological. When the males defined the list of medical terms, 35% left the term colic unanswered. Some of the females answering left the

term unanswered, also; 15% of them did not know the term enough to even attempt a definition. People knowing the term colic know it because they have had experience with colicky babies. Some of the misconceptions the men had about colic are that it was a chest cold, an infection, a stomach sickness, a virus-caused illness, a disease, a collar rubbing a person's neck, and a bad cough; that it is caused by a draft or a chill, food not agreeing and too much candy. They did seem to realize that it is commonly found in babies although some thought children had it. The females usually realized it was a stomachache in babies, that there is constant crying, vomiting, gas, but there were wrong answers for women, also. Some called it a severe chest and throat infection, involuntary and violent coughing, an illness; the cause was formula, cold milk, or food, according to them. What people have experienced determines to a large extent what they understand about a term's meaning.



"Sugar" or high blood sugar is what diabetes means to most people. To one of my informants, a doctor, diabetes means an overweight female 40+, probably with high blood pressure and hardening of the arteries. Doctors and nurses think of diabetes as consisting of juvenile and maturity onset types. The juvenile diabetes appears in childhood because of a defect in the pancreas and requires the use of insulin in nearly every case. Maturity onset diabetes can often be controlled by diet; in this type the pancreas has exhausted its ability to produce insulin. Diabetes according to the dictionary is an inordinate and persistent increase in the urinary secretions; especially diabetes mellitus. Two types described are diabetes insipidus and diabetes mellitus. Insipidus is a metabolic disorder resulting from decreased pituitary gland activity resulting in excessive thirst and the passage of large amounts of urine with no excess or sugar. Mellitus is a disorder of carbohydrate metabolism, characterized by hyperglycemia and glycosuriae and resulting from inadequate production or utilization of insulin. The symptoms are elevated blood sugar, sugar in the urine, excessive urine production, excessive thirst and increased food intake. Laymen, the prototype definition list results show, do not think of diabetes as referring to juvenile onset or insipidous. They associate diabetes with mellitus and only with some features of it. They know diabetes has something to do with sugar, pancreas, insulin, and diet. Only one respondent used the word urine in the definition. No one mentioned an increase in urine secretions, excessive thirst and food intake. Since they don't associate these features with diabetes, they could not recognize symptoms of diabetes in themselves.

The men knew diabetes was blood sugar level problem, but only 30% knew it was a high blood sugar level; 50% of them didn't commit themselves as to whether it was high or low, and about 20% said it was low blood sugar. One said it was a lack of necessary ingredient for blood flow and one said it was a result of poor diet. Some believed that diabetics have to take insulin to live, that sores don't heal as a result of diabetes, that medication and diet is needed the rest of a diabetic's life; and that it causes blindness and is a result of heredity. The women also had problems understanding diabetes in spite of the fact that they were in a medical program and had to take medical linguistics as a course. About 30% mentioned a general blood sugar problem, 30% thought it was a high blood sugar level, and 30% thought it was low blood sugar level; 25% mentioned a pancreas dysfunction, and 25% mentioned insulin lack. One thought it was typical of slightly extroverted people; one thought it was caused by feeling unwanted. One pointed out it was a general term for two types: insipidous and mellitus. Although the layman has some knowledge of what is involved in diabetes there are characteristics of it he's not sure about or unaware of, resulting in mismatches of meaning between doctor or nurse and himself.



"Medically we've run these tests and everything shows up normal, but because of what's happening in the home, the stresses you're under at this time, your body is reacting and you've got a nerve problem." What did the doctor mean when he used the word nerve in this sentence? He could have meant it physiologically, psychologically, or both. Physiologically, he could have been thinking about the patient's thinking process, neural responses, and the chemical changes and might prescribe medication such as Valium or Elavil. Psychologically, he could have been thinking, "He's crazy in the head." He might say then, "We have a counselor in our clinic here who you could talk to." The patient in most cases would say to himself, "It's all in my head." Nerves to him mean a mental condition. Nerves is a term resulting

in frequent mismatches of meaning between physician and patient. This was borne out by the salient features set down by the survey respondents. Nerves were characterized as a mental condition by 53% of the male sample. They used phrases such as "They're shot," jumpy behavior, people's feelings, tension, frustration, and sensory overload. They thought nerves were caused by emotional problems, nicotine, caffeine, and individual situations. The other 47% described nerves as what records feelings on skin, what makes you able to feel things, an electrical line in the body, a specialized complicated network in the body, means to carry information to the brain, means to inform the brain of pain/pleasure. They believed "nerves" caused stomach problems, people to seek booze and drugs. Only one person mentioned nerves as carriers of information to muscles. Apparently most of those defining nerves as carriers, thought of the sensory nerves, but not the motor or mixed nerves. Females also characterized nerves as a mental condition, 46% of them. The rest labeled nerves as fibers, message senders to brain, impulsive carriers, sensors, a communication system.

The ones considering nerves as a mental stress condition labeled them as things that fray, mental stress, nervous breakdown, psychological condition, and a psychological reaction to minor irritation. They listed as causes mental stress, the boss, menopause, hyperactivity, being pinned up at home, business pressure, teenage worries, children leaving the nest, little babies crying and the phone ringing. Nerves resulted in various behaviors such as jumpiness, unsteadiness, ulcers, nervous behavior, anger, upset stomach, crankiness, pulling out hair, immovable limbs, excitable behavior, intolerance, fear, numbness, irritability, shakiness, nervous breakdown, wanting to scream, and grey and white hair.

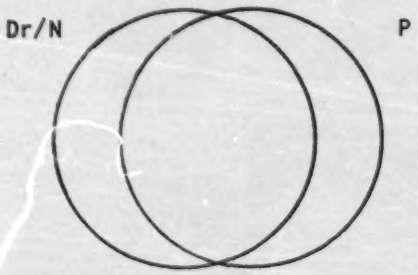
Many respondents felt that the typical person with a case of "nerves" was a middle-aged woman (28% of them); one female respondent believed the typical person was a 40-year-old business executive and the rest felt it could be anyone. Of the medical informants I asked, only one interpreted nerves other than structures that carry electrical impulses. This was a woman and she said the typical case of nerves was a housewife in her 30's with a young child, with no outside interests and a smoker. A doctor defined these structures as those causing movements of the muscles and relaying sensory information. Two nurses simply said they were bundles of fibers which connect the brain and spinal cord to various parts of the body through which messages are relayed. Doctors seem to be the only ones that highlight the muscle component of the nerve definition. Perhaps even nurses don't understand nerves.

A doctor or psychologist's prototype of depression is a person who is below par in functioning physically and mentally. He perceives this patient as one whose whole system is pressed down and sluggish. The patient, on the other hand, has a prototype, a person who is below par in functioning mentally only. He has an individualistic approach. Doctors feel that "all individuals have times when they feel better or poor for perhaps no obvious reason." Depression is an exaggeration feeling of being down in the dumps. One nurse felt the prototype was a woman 40+ who suffered from the "empty

nest" syndrome and a grandmother complex, and who was lonesome and who engaged in futuristic thinking. Another believed that the etiology is unknown, it hits more women than men, the patient typically withdraws, speaks in a very low voice, feels guilty for feeling depressed, "many shrinks believe it is suppressed anger which the patient is inable to express," she wrote. Both males and females agree that it is an exaggeratef feeling of being down in the dumps. The males believed the causes were insecurity and dissatisfaction with interpersonal relationships, could be caused situationally or artificially (drugs), failure to believe in one's self, a defeat or loss, poor health, things the person cannot control. They felt it could happen to anyone. The females felt it typically would be a 30-year-old housewife or an elderly woman in the nursing home. Many of these females have worked in nursing homes as a nurse's aid or else as a practicum and so have seen many depressed older women. Many of these students are, or have been, also 30ish housewives. One felt the typical depressed person was a man who has lost his wife, and one felt it was a girl whose boyfriend had dropped her.

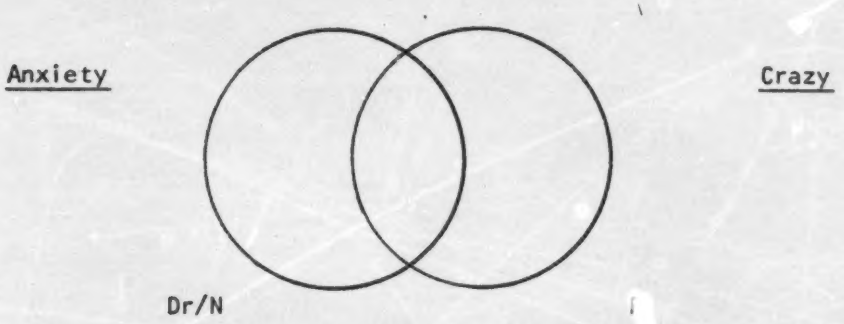
They listed a variety of causes: low self-concept, self-centeredness, alcoholism, insecurity, post-partum, lack of caring for self, external situations, worry, nothing to do, finances, feeling unwanted, pressure, loss of love, unloved, no self-worth, and a bad marriage. The symptoms they believe that are indicative of depression are sadness, wanting to die, decrease of functional activity, sulkiness, moodiness, nervousness, tiredness, withdrawn, apathy, mopey, negative attitude, crying, indecisiveness, wanting sympathy, and non-communicativeness. Although there is a great deal of semantic overlap between the doctors and nurses in their interpretation of depression, there are several differences in the prototype as far as the typical person. The female respondents seem to be basing their prototype on their own lives and themselves.

Depression



Crazy is a term generally not used by medical workers, but is commonly used by lay individuals to denote someone who has mental illness to a degree that they are in some manner incapacitated, showing bizarre behavior in thinking and acting. When a patient discusses his problems with a physician or psychologist, he often says he thinks he is "going crazy." The physician does not think so. He'll tell the patient that he is "losing control" and that what he is experiencing is anxiety. Those are the medical terms for

referring to what the patient is referring to. Patients may not always see that this is the case, however, and so mismatches may occur. Half of the respondents used the term crazy to denote a demented condition, 50% of them. The rest of them apparently used the term to mean just having a good time. They used phrases like, according to your standards, being around friends, laughing, Kathy Roberts, Steve Martin. The females saw crazy as meaning acting silly much more than the males did. The males used terms like insane, someone out of his mind, not knowing reality, out of control, abnormal reactions, living in ones own world. One female noted that it is a loose word. Doctors would agree. That is why they do not use the word.



What does normal mean? To the psychologists it means what is common for the group, the norm. To the physician it means what is thought to be within the range of what is generally present in the population. Normal is often defined in things that can be quantitative; for example, blood pressure has the values that 95% of the general population have. Quantitativeness is a salient characteristic of medicine and it shows up in medical language, often causing meaning complications for the layman. Nurses think normal means typical and have as a prototype patient one who is female, 40 years old, works, has religious beliefs, morals, and who is humorous. Most of the people in the survey would not disagree with the psychologist and nurses, but some do look at normalcy from an egocentric view. Normalcy is based on what is familiar to them. They see themselves as the standard and not the group. Psychologists and doctors need to determine then what the patient's standard is for normalcy or else risk a communication failure.

Other medical terms have interesting meaning aspects also. Diarrhea is a discrete word when doctors use it among themselves. It means having 6-8 very loose bowel movements that could flow. Dia - through, rrhea - to flow. Patients often tell doctors they have diarrhea when they have had two bowel movements and these may have been firm. The term means different things to laymen and medical workers. The medical students responding knew that diarrhea meant loose stools but the quantitative element was missing completely.

Medical people think of the term ear to mean the middle and internal ear, but the general population thinks of the ear as the external ear only. The external, middle, and inner ear are all important in hearing, but the

laymen only associate the external ear with hearing. This can result in patients and mothers of young children not realizing the importance of middle ear infections and earaches. Not one respondent indicated that the ear meant anything other than the external ear. One claimed that an ear was used to aerate the brain!

The term breasts is a commonly used term to denote the mammary glands in a female. Medical dictionaries do not use breast as a lexical entry. They do list mammary glands. A non-medical dictionary, the AHD, defines it as: 1) The human mammary gland; 2) The superior ventral surface of the body, extending from the neck to the abdomen. Of males answering, 10% interpreted breasts to mean human (either male/female) glands and 16% indicated that breasts were functional for sexual arousement, with rest indicating they were used for nursing infants or storing milk. More than twice as many females considered both males and females as having breasts, 22%. The females were subjective in their descriptions: toys for husbands; they just sit there, sad; cancer; everythings okay; growing up; nipples; too small; feeling complete; not a slang word; mother nature. Physicians would need to understand what breasts mean to women--feeding infants, exciting men, feeling complete--when discussing them or examining them or else have uncooperative, fearful, confused patients.

Medically, the stomach is the part of the intestinal tract that accepts food from the esophagus initiating the digestive process. However, it is thought by lay people generally to mean the whole abdominal area.

Euthanasia, according to many physicians, is the putting to death of an individual for "humanistic" motives. To them it is prolonging life. To laymen it means prolonging death; it is a mercy killing, not prolonging agony, a good death, painless death. Not one respondent indicated a negative understanding of the word. To them it <u>is</u> a humanistic reason for the putting to death of an individual. Not everyone knows the word euthanasia--10% of the men did not. One said it was a breathing disorder. The females all knew what it meant, 100%.

Almost all lay people know that arthritis is inflammation of the joints (except one male who thought it was a partial paralysis of muscles) but they do not know that it is not a disease, but a symptom of many different diseases.

Arteriosclerosis literally means hardening (sclerosis) of the arteries (arterio). This can be caused by the cumulation of substance in the artery walls and is generally associated with older individuals that are 50 years and older. However, it has recently been shown that the majority of men in their twenties will have some degree of arteriosclerosis according to Dr. Christian. It is the leading cause of death in this country. All of the males and females reported that old people have arteriosclerosis. None of them realized that younger men can have this condition to some extent.

Most respondents knew that a hysterectomy is an operation in which the uterus is removed but one male confused it with a mastectomy, saying it was surgery for breast removal.

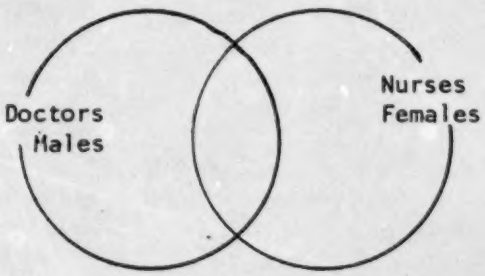
Toxemia causes real meaning problems for men. Toxemia is the distribution throughout the body of poisonous products of bacteria growing in a focal or local site and in pregnancy means various conditions affecting women. Its etiology is unknown. Men said it was a poison flow of blood, low amount of blood sugar, a toxic substance, the study of toxic and non-toxic substances, the removal of tonsils of the throat, and clearing up breathing and speaking problems. The word was not computable for 100% of the men; 20% of them did not attempt to describe the term, leaving it unanswered. Being male makes a difference. The term is associated with pregnancy, usually, and men have not had this experience, of course.

Ventilation is the oxygenation or aeration of the blood. This polysemous word caused serious meaning problems for the women medical students. Only 2% knew what it meant. The term was defined as proper circulation of air, an air passageway, mouth to mouth resuscitation, intake of fresh air into a room and removal of stale air, forgetting to breathe, air conditioning, movement of air in given places, difficulty in breathing, air flow in a room. They thought of the non-medical sense of the word.

Colostomy is also a term with semantic overlap. Both patients and doctors know that it is a surgery performed on the colon, but patients do not realize it is the creation of a new opening to the outside. They believe it is a removal of part or all of the colon. When they do realize the word's meaning they are upset because of the change in lifestyle, the social stigma, the idea of defecation, the odor. It is a traumatic experience that could have been prepared for if they had known what the word really means.

Patients often don't realize that prosthesis involves amputation. It is a shock to them when they discover this. Some women patients and most spouses of women having hysterectomies feel that it denotes loss of femininity and libido. Often men feel a vasectomy means loss of masculinity.

One could go on and on with examples of medical meaning mismatches.



The doctor defines the nurse objectively, almost coldly, as one of a number of health workers with varied backgrounds and training that assist in the care of patients. The nurse defines the nurse as a trained or educated people, usually women, who do the day-to-day caring of the sick, assist the doctors, direct aides, orderlies, and therapists and who is generally responsible for the patient's care; the nurse's prototype of a nurse is a female 20+, business-like, clean, neat, calm. Of the males, 25% labeled nurses as male or female; 70% thought of them as doctor's helpers; one of them said nurses do a lot more than doctors; one said a nurse is not an M.D.'s understudy; one said nurses show consideration. Only 18% used any evaluative descriptions of nurses.

In contrast, the females who were studying for a health care job, and who were in many cases nurse's aides, were extremely evaluative. They described and labeled nurses as lady in white, tall, friendly, a helper, nice, well-dressed, forceful, cheerful, attractive, nice, pleasant, understanding, tactful, makes patients feel better, concerned, professional, can take anything from a patient, gives loving care, empathetic, calm, kind, conscientious, helps relieve pain, collected, dedicated, concerned, trys to help everyone, listens to patients. Only 14% labeled nurses as being either male or female and only 14% believed being a nurse meant being a doctor's helper. A man's concept of a nurse is very different from a woman's concept of a nurse, especially women already in a health career or one preparing for one. The person's meaning for a term is based on his sex and experience and his expectation is clearly evident from the data about the term nurse.

The doctor defines doctor as a term used for anyone with a doctoral degree in medicine and is generally reserved for those individuals with clinical degrees, namely medical doctors, doctor of osteopathy, doctor of dental science. The nurse defines a doctor as a trained and educated person who determines the probable cause of illness and prescribes treatment. More recently he has had less and less "hands on" contact with the patient, leaving all that to the nurse, he is usually male and egotistical, about 45 years old, stern, objective, classy clothes and car, "I am," godlike (idolatry), more with older ones who are usually soft spoken and not so rushed. The males in the survey were mostly objective in their doctor prototype definitions. About 20% felt they could be male or female, 50% labeled them as highly trained and certified; several labeled them as a person who <u>hopes</u> he can find an answer, or one who <u>attempts</u> to know man's ills and cures for those ills. One labeled a doctor as one who cures or kills the patient.

The females were not so objective. About 18% saw him negatively, using words like crotchety, rough, or abrupt. The rest saw him neutrally or positively using positive words like revered, dedicated, good-looking, intelligent, concerned for people, friendly, cool, kind, cares about people, professional, respected, understanding, handsome, and hardworking.

The student's view of the doctor contrasts strikingly with the nurse's view of the doctor. The medical students' meaning of the term doctor probably coincides with the average female layman's meaning for the term. About 50%

of the females labeled him as highly trained and educated. They described doctors as men in white; 25% of the females picked out this characteristic to define doctors. Women are subjective in doctor definitions: Nurses are negative and students are positive. Men are mostly objective.

Nursing instructors and physicians defined a patient as an individual who is seeking or needs medical help or as a person who, because of disability, disease, or illness, must have his needs met by one educated in the care and treatment of the aforementioned or anyone who brings a complaint to the medical hierarchy.

Nurses, nurse's assistants, and the female medical students saw patients less objectively. For them, patients are female, 35-40, demanding, over-dressed, vociferous, fat, bitchy lady, troublemaker, someone wanting service, grumpy, self-centered, strange, cranky, and grouchy.

The students gave negative characteristics of patients (40% of them) no doubt because many of them have had experience working in doctors' offices or hospitals, which was also true of the nurses. They have been involved in daily "hands on" care of the patients and have a different kind of experience with them than the doctors and nursing instructors. Patients react differently to doctors than they do to nurses. Nurses have more exposure to the patient than do the doctors. The result is different meanings for patient by doctors and instructors than for the nurse or assistant. The male students saw patients neutrally and objectively as individuals receiving medical aid and care (98% of them) although one black male described a patient as "the waiter--sick people who wait for doctors" reflecting his own and perhaps his race's experience with doctors.

Female students believe a patient is one who comes to a doctor's office, 45%, or one who is in the hospital, 50%, or one who is in a nursing home, 5%. The males also felt that patients are those admitted to hospitals--45% mentioned this, while the rest did not mention where the patient went for care and help.

Conclusions

1. There are mismatches in classification, function, cause, symptoms, location, results, and patient type. Some terms have more overlap in meaning than others.

2. Medical workers have a more general, more inclusive meaning for medical terms than do lay people: fracture, colic, ear, diabetes, arterio-sclerosis, toxemia, depression, and abortion.

3. Many medical terms are not computable at all or are barely so for certain patients, depending on their background and experiences: colic, toxemia, hypertension, stroke, obesity, euthanasia, prematurity.

4. Physicians and men at times are more objective than nurses and women medical students: breast, nerves, nurse, doctor, patient.

5. Meanings are a result of beliefs and experiences for both males and females: depression, psychologists, abortion, fracture, vasectomy, stroke, patient.

6. Men give fewer salient features than women do in a prototype definition.

7. The causes of a disease or condition are less well understood than the symptoms and results.

8. Physicians and nurses have different typical patient types in mind than do male and female laymen.

9. Males and female lay people and physicians and nurses differ in what they highlight as salient features in prototype definitions.

10. Instantiation of medical terms occurs frequently in both male and female respondent prototype definitions.

11. Medical students often are confused about the meanings of medical terms: hypertension, nerves, abortion, diabetes, ventilation.

12. College graduates are more consonant with physicians and nurses in medical term interpretations than non-graduates.

13. Women are more consonant with physicians and nurses in medical term interpretations than men.

14. LPN students are more knowledgeable about medical meanings than medical office assistant students.

15. LPN students are more abstract, objective, and scientific than the MOA students in defining prototypes.

16. Physicians and nursing instructors are more abstract, objective, and scientific in defining prototypes than are nurses and MOA students and males.

17. LPN students define prototype medical terms based on their presuppositions of the instructor's expectations. Their definitions read like a dictionary.

18. MOA students give more salient features and more prototypical definitions than the LPN students and the males.

19. Medical students use more technical terms than non-medical students in their definitions.

20. College graduates use more technical terms in their definitions than non-graduates.

21. Polysemy is a problem for lay people.

22. Non-medical respondents gave more non-medical meanings for the terms than medical respondents.

23. Non-medical college graduate respondents understood the medical terms to be verbs rather than nouns more often than the other respondents.

24. Technical terms are less well understood than the common layman's terms for the same disease, condition, or organ.

25. Laymen operate on a concrete level in understanding medical meanings.

26. Stereotypes are psychologically real.

In order to improve matches between physician meanings and nurse/patient meanings, physicians need to plug into the psychologically real world more than they do. They need to understand the impact of presuppositions, intentions, beliefs, attitudes, moods, and encyclopedic knowledge in the interpretive processes. They will need to lay bare some misleading assumptions that are common among themselves and nurses which account for difficulties in comprehending medical terms and medical discourse. They need to realize that medical communication successes require more than just meaning taken in a narrow semantic sense; they require eliminating the distinction of semantics and knowledge of the world. Physicians need to understand that the medical sense of a word may not give a complete, necessary and sufficient set of conditions to determine its designation, and that designation may be governed more by prototypical examples than by a set of necessary and sufficient properties, and that sense does not represent all that laymen know about its designation. They need to understand that laymen foreground or highlight certain features that are salient for them according to their knowledge and beliefs about their designation. In addition, they need to know that medical words are processed in relation to the inferred intention of the medical speakers/hearers and that medical processing is an interpretive art with interpretive choices often built on the spot or particularized in contexts rather than being a selection of the best reading for the medical term. Physicians cannot eliminate the patient, his knowledge and beliefs, interpretive choices, and inferred intentions in the attempt to have the patient's meaning consonant with his meaning.

Communication problems often occur between doctors and nurses because of presuppositions. Doctors presuppose nurses don't know very much and so take on a superior attitude that prevents a nurse/doctor relationship conducive to communication. Rather than risk an abrupt, gruff answer, nurses won't ask questions when they are confused about a doctor's intention for a meaning. Doctors presuppose nurses will understand their own specialized, non-standard, abbreviations and will understand their use of Greek and Latin as "everyday language," and so will use terms as "get the emesis pan, stat."

Nurses may know the meanings of each word individually (emesis = vomit, pan = basis, stat = now!) but perhaps have never heard all three words together. He may say to a nurse, "get me a three -0 suture," which could be interpreted by a nurse as 3-0 suture (size) or #000 as it is written on the suture package. He may tell her to get cat gut and not tell her what color, assuming she knows what color the patient requires. He may write on a chart that a patient needs a CBC and assume that the nurse will know he means tomorrow rather than now, today, because he presupposes she understands the patient's condition doesn't require the CBC immediately.

Many presuppositions are a result of physicians not really understanding what is included in a nurse's or nurse's aide's course of study. A breakdown in communication between nurses and doctors often results for night nurses because they are afraid of possible sexual involvement with doctors. Doctor's presuppose nurses like off-color jokes and desire sex with them. Nurses fear the doctors, and this fear results in an abnormal nurse/doctor relationship. Nurses are uncomfortable and do not ask doctors for clarification on meaning problems. Often the patient then suffers as a result of the meaning problems between doctors and nurses. Patients also suffer because of the presuppositions doctors have about them. Doctors often presuppose they have an ideal, mature, intelligent, sophisticated patient. They then use such words as oral, urinate, defecate, vomit, menstral flow, and evacuate the bowels rather than folk language such as by mouth, passing water, moving the bowels, throwing up, the blood during your period, cleaning out your intestines. Doctors presuppose patients are children and need to be shielded, so they assume a father role and act paternalistically, sugar coating what they tell patients and hedging and even lying.

Doctors presuppose that lying to patients is less harmful than telling the truth according to Laurence Henderson. ". . . far older than the precept, 'the truth, the whole truth, and nothing but the truth,' is another that originates within our profession, that has always been the guideline of the best physicians, and if I may venture a prophecy, will always remain so: so far as possible do no harm. You can do harm by the process that is quaintly called telling the truth. You can do harm by lying . . . but try to do as little harm as possible."

Doctors presuppose a dead man's family will understand that the man died of a cardiac arrest if the doctor reports objectively and exactly the dead patients condition, the medical measures taken upon arrival and later, using medical terminology. He presupposes that the family will infer that the patient died from all the medical facts presented illustrating the seriousness of the condition, yet the family may stare blankly and ask, "Did he die?" Doctors presuppose it will make no difference to a woman psychologically or financially if they order her to have a hysterectomy. Presuppositions often do cause meaning problems between doctors and patients.

Since patients stand in awe of doctors because of their years of education and god-like attitudes, they often will not ask doctors to clarify a medical word or concept. Patients are awed and afraid of doctors and presuppose the

doctors will think them stupid, so they often don't ask anyone at all or perhaps will ask a nurse by phone rather than in a face-to-face situation.

Meaning problems result from this fear of face-to-face medical discourse with medical people and also because doctors do not take sufficient time to explain to patients what something means.

Dr. Christian said, "I think perhaps that most of the difficulty with physicians communicating with patients is not so much their presuppositions, but their unwillingness to take time."

The hurried manner of both general practitioner and specialists, especially specialists, is a serious reason for mismatches of meaning. Often, specialists reporting after surgery do it in a rushed manner using technical terms and leaving immediately after the reporting without waiting for questions, without giving the listener time to reflect, organize his thoughts, and ask about what is not clear. The physician just does a fast act and disappears.

Specialists often do not take time to read a referred patient's history and so cannot use information about the patient's experience, knowledge of the world and beliefs for better shared meaning. Family doctors and specialists such as surgeons and anesthesiologists need to take time to "know the patient" and explain thoroughly and promote question asking. Better rapport and fewer malpractice suits would result then.

Because laymen do not understand that all treatment entails risk, informed consent laws require that all details of possible bad effects must be listed and explained. Since patients are often frightened because they don't understand the normal daily risks, so doctors must take time to be explicit even if it is easier to be implicit and obscure and even if it runs counter to what they learned as undergrads in medical school in the course Arrogance 203.

Patients do come with preconceived notions to a doctor's office, expecting something different from what they see. They may not expect a 28-year-old Christian psychologist, and if they do meet one, they expect him to whip out a Bible and preach. They come to a psychologist and a doctor expecting solutions and cures. In the doctor's office, they may have to throw out all their old meanings and reconstruct new meanings based on the immediate context. Some patients do it better than others.

Doctors have a responsibility to help them reconstruct new meanings and to construct meaning by using the cooperative principle and by not breaking the given-new contract. Their medical discourse style should be appropriate for the patient. Many times the listener cannot compute the intended interpretation of the utterance as it was meant to refer to the real world of events and objects. Doctors need to realize this and use appropriate lexical items and style. In order to compute, the patient must have sufficient knowledge and skill to be able to compute the intended antecedent. If the patient can't compute, then he must have enough information to build

a bridge and skill to do so. Whether the intended antecedent is computable or not will depend on the patient's beliefs, his sophistication in computing bridges, and the gap to be bridged. These must be judged by the doctor. This takes communication knowledge and time and willingness on his part. Physicians also need to realize that their oral language in a physician/patient situation often is an unnatural oral language. It may more closely resemble written language. He may use longer, more complex, and more grammatical sentences. They might be more abstract, more logical, and more precise and compacted. He may use longer, and less common words, use less redundancy and fewer words to communicate the same idea. He may often talk formally and use the techniques that writers use, approaching the patient/listener as a writer would his readers.

This use of unnatural oral language, the breaking of the cooperative contract, the lack of taking sufficient time to be explicit, the ego-centric perspective taken, the lack of understanding the patient's intentions and purposes and the encyclopedic element in addition to the semantic element in interpreting medical discourse--all of these add up to unsuccessful speaking and listening in the physician/patient dyad.

Physicians need to understand the psychology of language in general and the psychology of medical language in particular. They need to know what the effect is of the underlying semantic theiries they are using on themselves and on their patients. The best communicating and the fewest medical mismatches will occur when physicians do realize these facts and realize the truth of Samuel Johnson's statement: Language is only the instrument of science and words are but the signs of ideas.